

UBS Center
Public Paper #2

Fear, Folly, and Financial Crises

Some Policy Lessons
from History

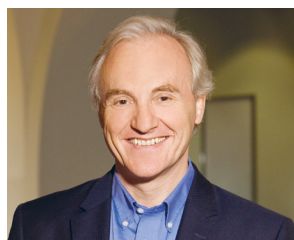


Joachim Voth

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Editorial



Prof. Ernst Fehr
Director of the
UBS International Center
of Economics in Society

Dear reader

It is a great pleasure to present the second UBS Center Public Paper entitled “Fear, Folly, and Financial Crises – Some Policy Lessons from History”.

Since the world financial crisis of 2007/08 it has become clear that financial crises and the major economic downturns they cause happen neither just in distant countries nor in the distant past. They are part of the economic realities of developed countries in the present.

In this Public Paper, the author presents the latest academic insights into the history of financial crises. What can we learn from the past when it comes to defining strategies and policies for dealing with financial crises? Why is the optimal number of financial crises not zero? You will receive the answers to these and related questions from Prof. Joachim Voth, a leading specialist in financial and economic history.

As in the first paper of this series, the author of this second Public Paper is an international top specialist in his field, and the Public Paper is written in a clear, compact, and highly readable format, free of academic jargon and understandable without prior knowledge about the subject. It therefore meets the UBS Center's aspiration to provide new relevant research findings on key economic topics of our time to a broad audience.

All that remains is for me to wish you much interest while reading it!

A handwritten signature in black ink, appearing to read 'Ernst Fehr', written in a cursive style.

About the author

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Joachim Voth is Professor of the Economics of Development and Emerging Markets at the Department of Economics at the University of Zurich and Affiliated Professor at the UBS International Center of Economics in Society.

His area of specialization is financial and economic history, with an emphasis on the history of speculative bubbles and stock markets, as well as long-run economic growth.

Professor Voth has published numerous articles in leading economics journals such as the *American Economic Review*, *Quarterly Journal of Economics*, and *Review of Economic Studies*. He has received various awards and grants including an ERC Advanced Research Grant for a project on historical asset returns (2009–14). He is currently working on a project about liquidity and asset returns in times of turmoil for which he received a research grant from the Institute for New Economic Thinking (INET).

Abstract

Financial crises devastate human lives, causing major shocks to economic output, trade, employment, income, and wealth. And as the financial crisis of 2007/08 showed, these crises do not just happen in distant countries or in the distant past – they are part of the economic realities of developed countries today. It is therefore of paramount importance to understand the causes of financial crises, and to come up with sound policy advice about how to reduce their frequency and depth.

The present Public Paper looks at the rich history of financial crises, analyzing both contemporary and historical data on financial instability, and combining this with insights from economic theory. It argues that financial folly – collective mass-hysteria in financial decision-making – is not a helpful concept for understanding financial crises. While changes in sentiment occur, and can affect asset prices, financial crises are best understood as time- and location-specific responses to misaligned incentives and poor regulation.

This paper proposes a set of policies, which have the potential to reduce the number of financial crises and to soften their consequences. The Public Paper also explains why regulating crises out of existence would not be a good idea.

Introduction

Until recently, financial crises and the major economic downturns they caused seemed as far removed from the economic realities of developed countries as the Thirty Years War – they happened either in distant countries like Mexico or Indonesia or in the distant past. This changed abruptly after the world financial crisis of 2007/08. The United States and almost all countries in Europe were faced with a major shock to output and employment that originated in the financial sector; the aftereffects reverberated in debt markets in the eurozone, creating a second financial crisis where many governments were effectively shut out of debt markets.

Just before the crisis hit, central bankers and economists alike had declared that a new age of seeming stability and steady growth, the “Great Moderation”, was upon us – that central bank independence coupled with prudent interest rate policy and flexible labor markets had banished boom and bust cycles for good.¹ While output and employment were plummeting in the fall of 2008, academic journals were publishing papers accepted months and years earlier pinpointing the exact reasons why even moderate output fluctuations had died down as much as they did.²

Faced with a new, unanticipated phenomenon, economists, journalists and policy-makers began looking for explanations. Why did the world find itself in a situation that looked like a likely repeat of the Great Depression of the 1930s? How could leading economic powers end up in a situation reminiscent of Third World countries? As is often the case in times of confusion, a single, powerful narrative rises to prominence. In this case, it was

the idea that financial folly – of excessive individual risk-taking and collective mass-hysteria – is a constant of human life, erupting periodically with the same inevitability as earthquakes near major fault lines. In particular, the influential work of Carmen Reinhart and Kenneth Rogoff, based on a close reading of the last 800 years of financial chaos, argues that the idea that “This Time Is Different” has led to repeated swings from stability to crisis – after each crisis, people begin acting cautiously, taking fewer risks, and this was combined with good regulation.^{3, 4} Gradually, they convince themselves that instability is a matter of the past, and thereby sow the seeds of the next crisis. The pattern then repeats.

This survey analyzes both contemporary and historical data on financial instability. Combined with insights from economic theory, it argues that financial folly is not a helpful guiding principle for interpreting and understanding financial crises. While changes in sentiment occur, and can affect asset prices, misaligned incentives and poor regulation are the main drivers of instability. Financial crises do not share one key underlying problem like pervasive financial folly. Instead, they are best understood as a mixture of highly time- and location-specific factors interacting with more general patterns that produce instability. The purpose of this essay is to uncover what mix of institutions and incentives creates chaos, and which guiding principles should be applied in reducing their frequency.

Insight No. 1: Stability is easy

Saying that “stability is easy” sounds provocative. But the facts bear it out. Figure 1 shows the frequency of financial crises since the 19th century.⁵ It shows three types of crises – currency crises, banking crises, and “twin crises”, when both occur simultaneously.

The remarkable period is 1945–73. There were currency crises, but the frequency of banking crises was essentially zero, except for one crisis. Compared to the earlier and later decades, the postwar era looks like a miraculous island of tranquility. How was this possible? How could highly developed countries not just grow moderately, but grow rich at the highest rate in recorded history without major setbacks and crises?

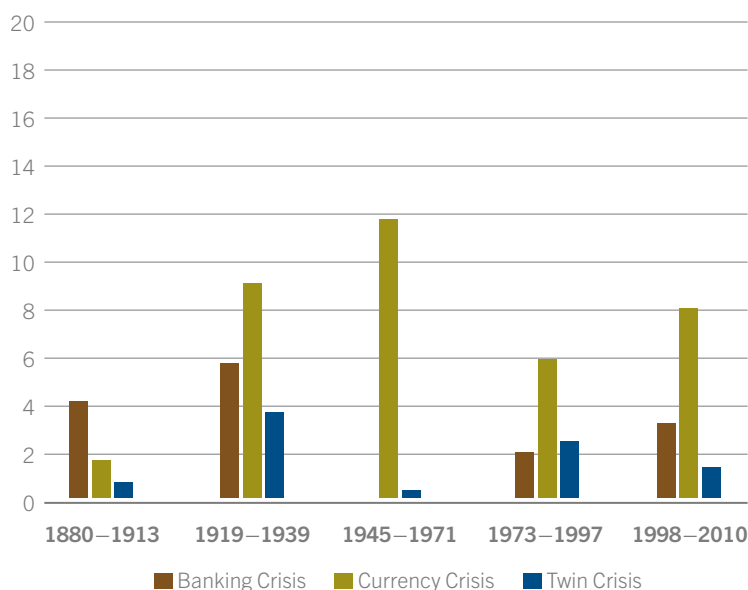
The stability of the Bretton Woods era was no accident. When the Western Allies discussed how to structure the world economy after the defeat of Germany and Japan, reducing the frequency and severity of crises was uppermost in their minds. What was the lesson of the calamitous 1930s, according to John Maynard Keynes, who attended the conference for the British side? That there should be no more international capital movements in the future. International trade? For sure. Exchange of ideas across borders? Certainly. Migration? Perhaps. But flows of capital – certainly not. The lesson drawn from the Great Depression – and not just by Keynes – was that international borrowing had to be avoided at all cost. The reason was that “hot money flows” – sudden reversals of short-term international lending – put pressure on exchange rates and undermined the lending capacity of central banks in 1931/32 at exactly those moments when it hurt the most.⁶

It was the IMF (and the World Bank), the new institutions of the Bretton Woods system, that were tasked with avoiding a repeat of the destabilizing cross-border flows that had characterized the interwar period. Ironically, these were the same institutions that came to enshrine the “Washington consensus” of the 1990s, with free capital flows as an integral feature. Henry Morgenthau, Treasury Secretary at the time of the Bretton Woods Conference, hailed the agreement as having succeeded in “driving the usurious moneylenders from the temple of international finance”.⁷

Without free capital flows, currency crises became nearly impossible for simple technical reasons – no speculator could move enough money across borders to

Fig. 1 **Frequency of financial crises over time**

Frequency (#Crisis / (Years*Countries))



Source: Bordo, Eichengreen, Klingebiel (2001); Reinhart and Rogoff (2009)

Bretton Woods

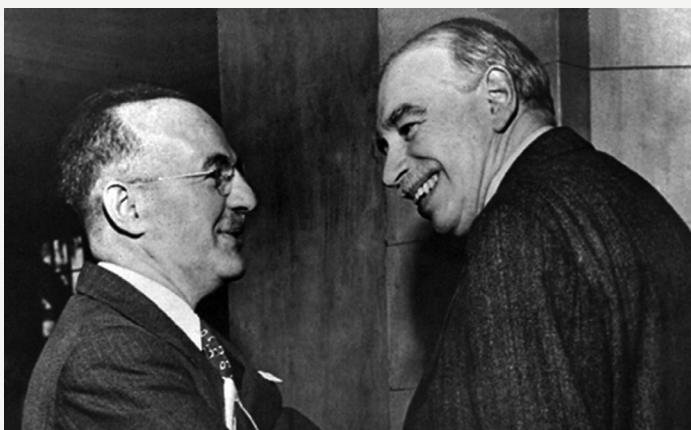


Source: Hugh Manatee

The Bretton Woods Conference took place in July 1944 at the Mount Washington Hotel in Bretton Woods, New Hampshire. The conference's aim was to rebuild the international economic system after World War II. The resulting system of rules and institutions became known as the Bretton Woods system and shaped the international monetary system up to 1971. This illustration of the hotel originates from a circa 1910 postcard made by the Detroit Publishing Company.

Architects

John Maynard Keynes (1883–1946) was heavily involved, as leader of the British delegation and chairman of the World Bank commission, in the mid-1944 negotiations that established the Bretton Woods system. **Harry Dexter White** (1892–1948), senior U.S. Treasury department official, was the senior American official at the 1944 Bretton Woods Conference. He dominated the conference and imposed his vision of postwar financial institutions over the objections of Keynes. The picture shows Assistant Secretary, U.S. Treasury, Harry Dexter White (left), and John Maynard Keynes, honorary advisor to the U.K. Treasury in March 1946.



Source: International Monetary Fund

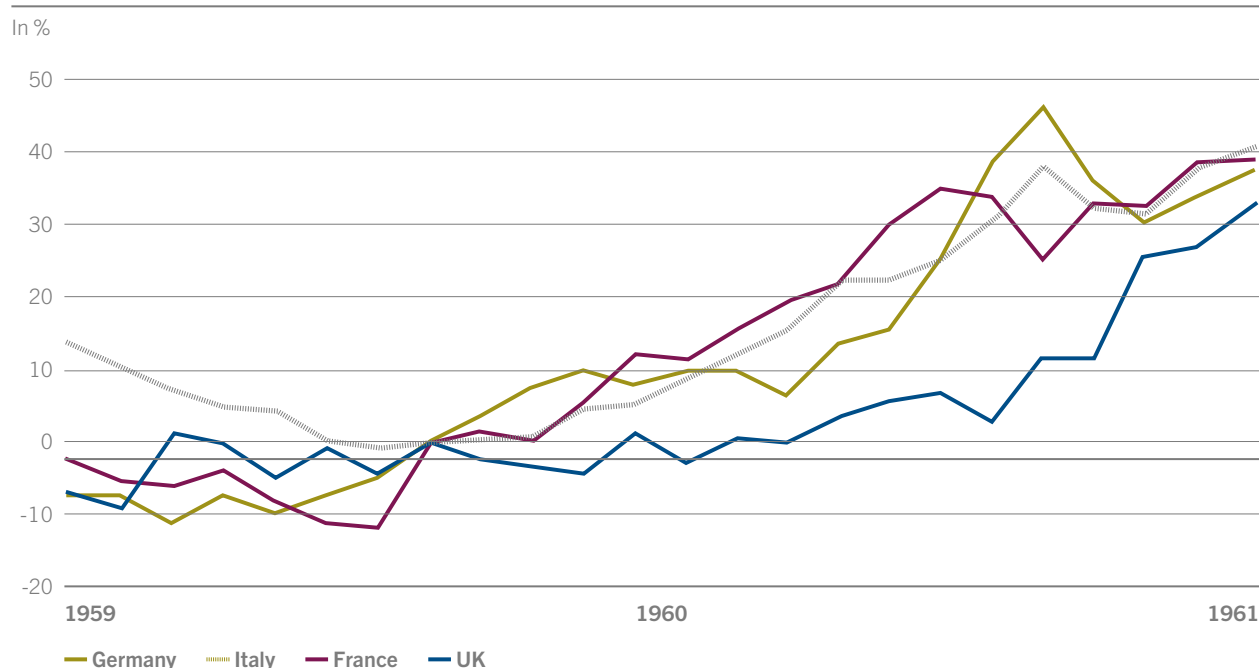
“attack” a misaligned currency peg. Similarly, banking crises disappeared as a result of regulation. Banks were told whom to lend to, at what rates, and what to pay to depositors. The United States, for example, introduced stringent controls on deposit rates, known as Regulation Q. First adopted in 1933, it prohibited paying interest on deposit balances, and was extended to cover various forms of deposits.

With competition between banks severely limited, profits were virtually guaranteed to be high. Banking regulation ensured reasonable equity cushions so that even a whole string of bad loans would not endanger a bank's survival. In addition, profit rates in most firms were high due to an implicit deal between “capital” and “labor”; self-financing provided a highly effective alternative to both bank lending and capital raising on the stock market.

Critics of modern capital markets often point to the Bretton Woods system as a model of good regulation. While it is true that financial repression existed side by side with superior economic growth, there was no simple causal connection that ran from one to the other. Europe's “super growth” after 1950 had many causes. In particular, the great reallocation of labor from agriculture to industry, which had driven growth since the start of industrialization, had stopped for several decades after World War I. As it resumed, growth surged – but in a way that was not sustainable *ad infinitum*.

There are good reasons to think that massive fiscal repression came at a cost to the European economy. If capital cannot flow across borders, the cost of capital will be higher for one basic reason – risks that could be diversified away in an international market remain a problem for the (national) investor. He hence has to demand a higher return for putting his money to work. One simple way of measuring the extent to which restrictions on cross-border flows “bite” is to look at

Fig. 2 Cumulative abnormal returns



Note: Cumulative abnormal returns (corrected for co-movement with world stock indices) around the introduction of current account convertibility. Returns have been rescaled to equal zero at the time of introduction of full convertibility (January 1959 for all countries except France, which introduced full convertibility in June 1959).

Source: Adapted from Bakker (1993); Kaplan and Schleiminger (1989)

the difference between on- and offshore interest rates – the differential between interest rates paid for a currency in the issuing country and in offshore centers. The greater the degree of effective control over capital controls, the greater the differential will be. Figure 2 gives an indication about how the limited opening up of capital markets created some “abnormal” returns of capital. It turns out that controls in post-World War II Europe are highly correlated with one measure of the cost of capital – the price-earnings multiple for stocks. This is an indicator of how much investors discount future cash flows when they buy equities at any given point in time; in a highly risky environment, for example, stocks typically trade at 8 to 9 times earnings, while stable stock markets see ratios of 15 or above.

In Western Europe after 1950, fiscal repression drove up the cost of equity in

an important way – the greater the differential between on- and offshore interest rates, the higher the cost of capital as measured by the price-earnings ratio.⁸ Valuations were artificially depressed, raising the cost of internal financing. As restrictions on capital mobility were gradually relaxed, share prices in European countries surged. This means that the Bretton Woods-style model of financial repression produced important costs. These were not readily apparent in the 1950s and 1960s as the recovery from decades of war proceeded apace; but they would hamstring further growth thereafter. This means that the remarkable stability of the period was not without cost. The absence of banking and currency crises (as well as major bubbles) avoided sharp downturns, but it came at a price of reduced economic performance.

Insight No. 2: The optimal number of financial crises is not zero

A government awards a major contract designed to restructure the debts of the nation to a company with excellent connections – and no track record in succeeding in trade. The firm issues many new shares, at ever higher prices, and offers to buy out sovereign debt holders. As stock prices skyrocket, everyone marvels at the ingenuity of the scheme that promises to lighten the national debt burden while making many rich. The fact that the company in charge bribed ministers, members of parliament, and the king's mistresses probably helps lighten the mood.

Eventually, stock prices start to slide; then, they decline more quickly; eventually, within a few months, they fall back to their precrisis level. The corruption is exposed, the leading officers of the company flee, ministers lose their positions, and the company's treasurer flees abroad. What sounds like a mixture of facts from the Enron scandal and reality TV actually happened. The time? The year 1720. The firm in question? The South Sea Company.⁹

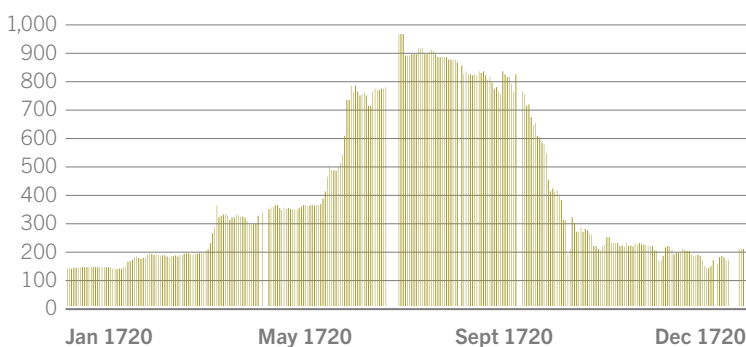
The South Sea bubble is famous for many reasons – it showed a more rapid increase in prices than most stocks on the NASDAQ, for example. It also served as an example of excesses to avoid for decades. One regulation that came out of the South Sea episode was the so-called Bubble Act. While it was passed at the company's request – in a bid to avoid competition from other firms for funds at the height of the bubble – it remained on the books for a century. By linking a firm's activity closely to its royal charter, it effectively prohibited the issuance of new equity in England until the early 19th century.¹⁰

Of course, it is hard for bubbles to form where there are no stocks. Stability reigned to a considerable extent during the century while the Bubble Act was in force. Combined with other regulations that limited the operation of banks – no banking firm could have more than six partners, for example – and interest rates on loans, England's financial system remained highly regulated. At its core, it failed at its most basic task – collecting savings and channeling these into these sectors of the economy that needed them the most.

One simple measure of how poorly financial resources were allocated during the heyday of the Industrial Revolution is the return on capital. While high rates of return look like a success, they are actually not – in a functioning market, fresh funds would chase these high returns. Over time, they would come down as the capital stock allocated to new activities surges. Eventually, with efficient capital allocation, the rate of return would be the same everywhere. This is not what happened.¹¹

Fig. 3 The mother of all bubbles: The South Sea bubble in 1720

South Sea stock price in pounds per 100 shares



Source: Temin and Voth (2004)

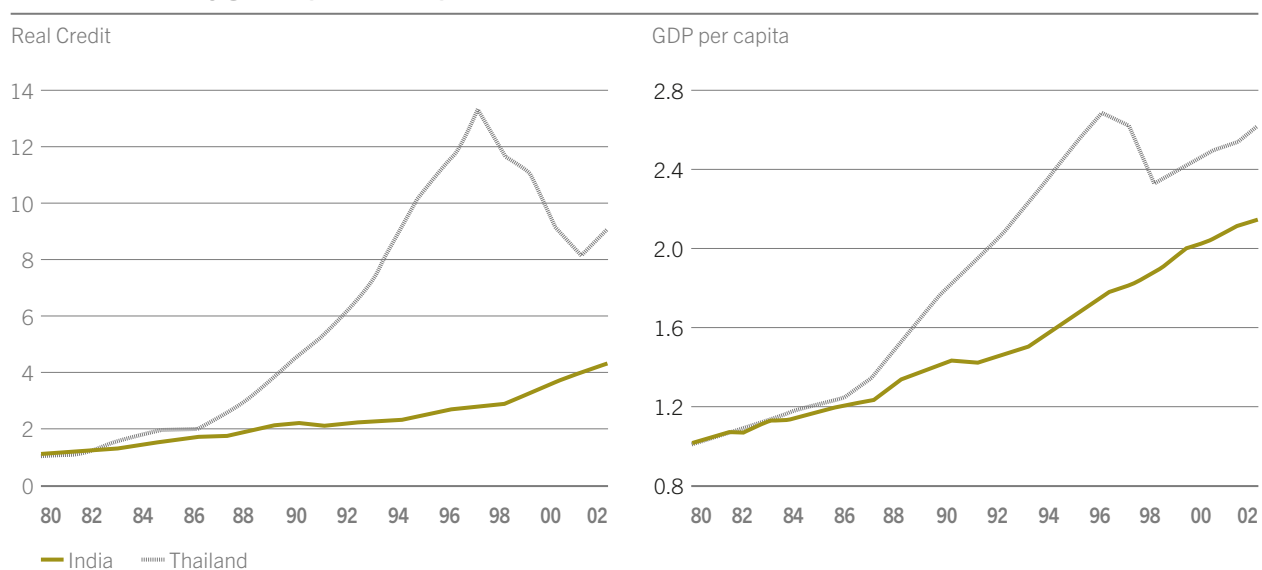
Rates of return on capital surged to very high rates after the Industrial Revolution got underway, from around 10% p.a. to over 23% by the middle of the 19th century. Capital also received an ever even larger share of the economic pie – it grew from 18% to 45% between 1770 and 1850. This shows just how “hungry” the new, thriving industries of the Industrial Revolution were for more capital – and how poorly the financial system satisfied this hunger. In other words, the Industrial Revolution transformed the way people produced and consumed, not because of the virtues of its financial system, but in spite of it.¹²

In turn, this also implies that the regulations introduced and kept in place after the 1720 bubble probably did more harm than good. Banks collapsed frequently, but this had few economic consequences – precisely because finance played almost no role in facilitating the transformation of the economy. On balance, tighter regulation made the British economy more stable, but it probably also grew more slowly overall.

Recent work on patterns of growth and financial development suggests that these insights from the First Industrial Nation hold more generally. Ranciere, Tornell, and Westermann look at credit expansion and economic growth around the globe over the last 40 years.¹³ They examine how “skewed” credit growth was – how often sharp, sudden declines in credit availability occurred. This is one particularly pertinent measure of financial crisis – an indicator of a “credit crunch”.

They then examine systematically if countries with more financial crises do better or worse economically. Theory offers no clear predictions here – it could be that more crises create uncertainty that produces a systematic drag on economic performance. Alternatively, crises may be a price to pay for higher growth on average, as the British example suggests. Ranciere and coauthors find strong evidence in favor of the latter. Figure 4 shows the growth and credit expansion paths of two countries – Thailand and India.

Fig. 4 Safe vs. risky growth path: A comparison of India and Thailand, 1980–2002



Note: The values for 1980 are normalized to one. The figures display annual credit and per-capita GDP series.

Source: Ranciere, Tornell, and Westermann (2008)

A myriad of restrictions and rules have stifled the financial sector in India; credit relative to GDP is low, and financial crises have largely been absent over the last half-century. In contrast, credit expansion in Thailand was fast, banking rules were relatively liberal – and the country suffered from wrenching financial crises. In particular, it was one of the places the East Asian Crisis of 1997/98 most heavily affected.

“There is a trade-off between financial stability and economic growth, whose optimal balance depends on the safety net in place.”

In the larger sample of countries, crises are more common where financial markets were liberalized – but growth was also more vigorous, mainly because credit expanded at a much higher rate. This suggests that there is a trade-off between financial stability and economic growth. Stifling the financial sector through rules and regulations can effectively avoid crises – as was the case in industrializing Britain, India after 1945, and recovering Europe in the Bretton Woods era. This does not mean that such policies are desirable, since they impose serious costs in the form of output not produced. Of course, crises themselves are associated with significant welfare costs. The optimal trade-off between stability and growth in part depends on the safety net in place for those caught in the occasional, inevitable downdraft when finance plays its role of fuelling economic development.

Insight No. 3: Lessons from financial history can do a world of good

“A crisis can be a good thing.” So said Andrew Mellon, multibillionaire and Treasury Secretary under President Herbert Hoover during the Great Depression. He felt that the great crisis would reduce prices, encourage honest hard work, and purge the excesses of the “Roaring Twenties” from the economy. Mellon’s words are often repeated as an example of ministerial callousness. Mellon accepted the downturn and all its horrors as an inevitable medicine that would help to cure the ills of the American economy.

The Great Depression eventually came to an end – but not before untold suffering had been inflicted on millions of ordinary citizens suffering from unemployment and bankruptcy. Democracy collapsed in Germany, which was suffering from a similarly brutal downturn, giving way to one of the most brutal dictatorships in history. It is therefore not surprising that there was a general sense of horror and dismay when, in the aftermath of the financial crisis of 2007/08, many important economic indicators started to evolve in a way that was eerily reminiscent of the Great Depression.

In Figures 5–7, taken from the work of Kevin O’Rourke and Barry Eichengreen, we see output, employment, and trade during the Great Recession and the Great Depression.¹⁴ Initially, all these indicators of economic performance were plummeting at a faster pace in 2008/09 than in 1929/30. And yet, history did not repeat itself; what looked like the rerun of a horror movie the world had seen in the interwar years turned out to be a much smaller crisis. Output recovered long before it hit a trough of minus 40%, as it did during the Great Depression;

Fig. 5 Output during the Great Recession and Great Depression

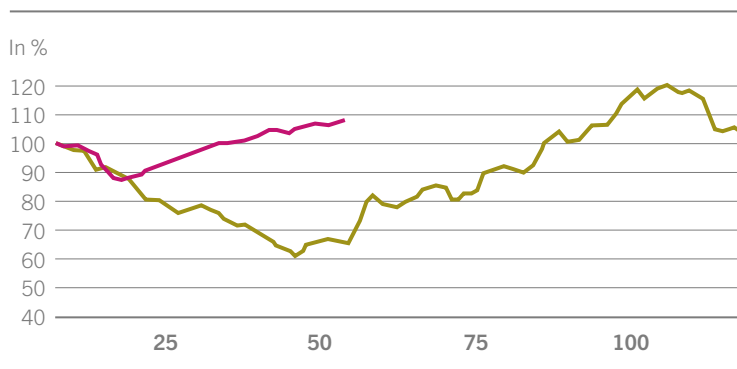


Fig. 6 World trade during the Great Recession and Great Depression

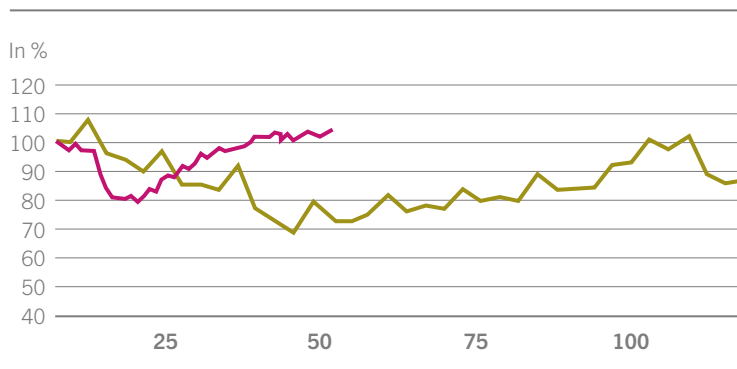
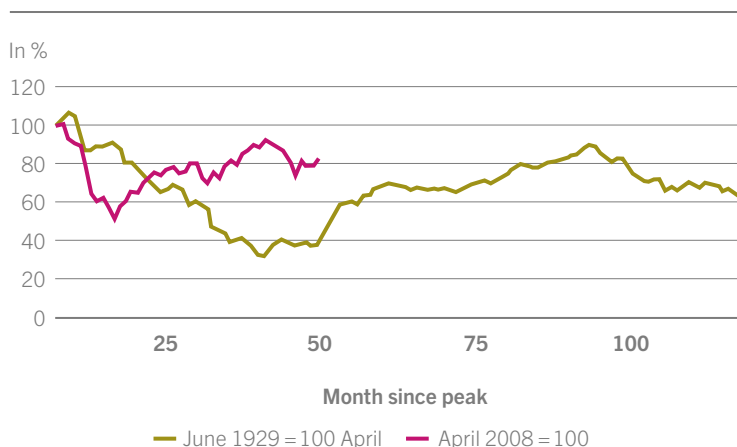


Fig. 7 World trade during the Great Recession and Great Depression



Source: Eichengreen and O’Rourke (2012)

trade bounced back, and so did stock markets. While unemployment surged and output in several countries is yet to regain its precrisis peak, there was no dramatic collapse in economic activity overall, and no fraying of the democratic system.

While comparing outcomes in only two – admittedly important – cases does not make for a solid empirical foundation, some insights suggest themselves. The first and most important one is that a vigorous policy response was effective in reducing the gravity of the downturn. After a period of initial confusion (during which the ECB even raised interest rates, and Lehman Brothers was allowed to fail), central banks everywhere opened the spigot of liquidity; no bank was allowed to fail because it could not borrow in credit markets. Interest rates were quickly slashed to values near zero, and kept there. Governments injected equity into wobbly banks and underwrote vast liabilities. As a result of this major, coor-

ordinated effort, the panic in financial markets that marked the year 2008 was brought under control.

Learning from history played an important role in making sure it did not repeat itself. Ben Bernanke's dissertation was devoted to one topic – showing that the banking crises that spread throughout the US in 1931 and 1932 were key for turning a garden-variety recession into the mother of all economic crises.¹⁵ Fettered by the rules of the gold standard, the Federal Reserve did way too little in the 1930s to avoid banking failures; as banks collapsed and credit declined, firms were starved of funds, bankruptcies reduced output and boosted unemployment, and missing wages contributed to further declines in demand. Subsequent research has analyzed data at much finer levels of disaggregation. Richardson and Troost show that banks in adjacent US counties performed very differently depending on which Federal Reserve District they belonged to.¹⁶ Those Federal Reserve Districts that operated generous liquidity support schemes ensured that their banks survived – and output suffered much less. Furthermore, active interventions by the Federal Reserve during a forgotten panic in 1929 as a result of a fruit-fly infestation quickly stemmed the wave of deposit withdrawals.¹⁷

Christina Romer, who acted as head of the Council of Economic Advisors to President Obama from 2009 to 2010, showed in her dissertation work that the collapse of the stock market in 1929 mattered for economic activity – not because speculators were suddenly poorer and bought less champagne and caviar, but because it heightened uncertainty. She showed how economic reports and newspaper articles reflected a growing sense of unease, highlighting the growing downside risks for the economy after the great stock market crash in October 1929.

While incomes were initially unaffected, patterns of consumption changed quickly

Great Depression in the US



© Dorothea Lange

Financial crises in the past often had devastating economic and social consequences. The picture shows a poor mother with her children during the Great Depression in Elm Grove, Oklahoma, USA. It is part of the documentary work of Dorothea Lange, an influential American documentary photographer and photojournalist. Her work brought the plight of the poor and forgotten to public attention.

and radically. By November 1929, automobile purchases were already down 14%; the decrease amounted to 24% by January. At the same time, spending in grocery stores continued to grow. The more durable a good – the greater the size of the necessary financial commitment – the greater the downturn in consumer spending.¹⁸ This reflects the important effects of uncertainty on demand. In contrast to the view of an earlier literature that had always cast the Great Depression as basically unrelated to the Great Crash of 1929, Romer's work proposed a plausible link – one she backed up with compelling empirical evidence.

“The fact that the Great Recession did not turn into the Great Depression, Act II, is in large part a reflection of determined policy intervention – a case of learning from the past to avoid its repeat.”

Healing financial markets and getting stock prices to recover was also instrumental in reducing panic in 2008/09. While the stock market after 1929 continued to slide – with a cumulative fall of over 80% by the summer of 1932 – stocks recovered from March 2009 onwards. Banks did not fail by the hundreds as they had during the years 1931 to 1932. The fact that the Great Recession did not turn into the Great Depression, Act II, is in large part a reflection of determined policy intervention – a case of learning from the past to avoid its repeat.

Insight No. 4: Sovereign debt crises are not inevitable – and they don't need to hurt

Companies fail. Municipalities stop paying their debts. Private individuals declare bankruptcy. These events occur almost every day, and they are normally not associated with catastrophic declines in employment and output. Sovereign debt, however, seems different. The risk of a sovereign debt crisis is enough to send financial markets into a tailspin. Banks wobble and output growth often slows. Why does not paying contractual obligations in one case seem to matter for aggregate economic performance – but not in the other?

One possibility, of course, is that there is no causal link running from sovereign debt crises to output. Instead, it could very well be that poorer performance spells lower tax revenues and higher debt burdens, which turn into a sovereign debt crisis. Sustainability of debt is commonly defined as the expected value of future primary surpluses. When generating surpluses becomes increasingly uncertain, bond investors will be more likely to panic; and once they do, rolling over old debts becomes impossible, making a full-fledged sovereign debt crisis inevitable.

Nonetheless, there is ample evidence for a direct link between sovereign debt problems and economic performance. Greece's collapse after 2009 only occurred after it emerged that the country had falsified its fiscal accounts. While it was not doing well beforehand, the downturn once sovereign debt problems emerged saw the country going from bad to worse. There are a number of reasons why sovereign debt can hurt the real economy. Banks are typically the “weak-

est link” in the chain, in the parlance of a popular British game show. Encouraged by regulations that declared government debt riskfree, they typically hold large quantities of government bonds. When their value falls, the banks' equity position is weakened; lending falls, and investment is curtailed. Consumers spend less, and a downturn begins.

In addition, highly indebted states often have to raise taxes and cut spending when faced with a sovereign debt crisis. As markets become less willing to buy the government bonds, borrowing has to be reduced, and interest rates rise. The finance minister has to increase revenue and reduce spending to ensure that there is no default. Of course, the logic of “automatic stabilizers” points in exactly the opposite direction – governments should loosen their purse strings in downturns, not tighten them. In other words, governments faced with a bond market panic often have to engage in pro-cyclical fiscal policy, making the crisis worse.

What is the solution? History suggests two practical lessons. First, loan syndication can be done in such a way as to actually achieve risk diversification. Second, banks that are not “too big to fail” can anticipate and cope with defaults. Third, sovereign bond contracts can be structured to avoid the need for pro-cyclical policies in the middle of a downturn.

Before banks engaged in economic activities useful to households and firms, exposure to sovereign debt made little difference. Philip II of Spain (1556–96)

ruled over one of the largest empires in history, with territories in the Americas, in the Philippines, the Low Countries, Italy, and the Iberian Peninsula. His revenues included vast income from the richest silver mines in the world, newly discovered in Potosi (in modern-day Peru). Despite all his power and wealth, Philip went bankrupt no less than four times. These bankruptcies show how limited the effects of major sovereign debt crises can be – not one of them created an economic downturn.

This is not because he borrowed little. Total debt amounted to 60% of GDP or so – close to the maximum permitted for EMU membership.¹⁹ Philip's bankers were not rich enough to finance this debt themselves; they syndicated their loans to many small and mid-sized investors, who thus also bore the brunt of the defaults. Whenever the king declared a payment stop, the bankers were at risk of major losses in their own portfolio. At the same time, because they (mostly) had not borrowed themselves from depositors, they were not in risk of bankruptcy themselves. Of course, the fact that bankers engaged in few economically beneficial activities – apart from lending to the sovereign – helped to contain the economic fallout.

Every time the king stopped paying, his bankers were naturally up in arms. The king accused them of usury; the bankers in turn accused Philip of breaking contracts and undermining their livelihoods. Negotiations followed, and typically, they concluded quickly, within 1–2 years (debt renegotiations in modern times take much longer, and can last up to 8 years). Nonetheless – despite all the complaints and recriminations – the same bankers continued to lend to Philip II. As a matter of fact, they lent at the same terms and conditions as before – interest rates stayed the same, and lending volume and duration were unaffected.

In other words, the defaults were non-events in terms of the modalities of sover-

eign lending. How can this be? Did the king not high-handedly default on what would be billions of euros in today's money, with the only purpose of fighting expensive foreign wars? The answer is that it made good economic sense; on average, the bankers all made money – lots of it. If we look at the overall return for each banking dynasty, not one of them is below zero. On average, bankers made more than 15% p.a. Payment stops and renegotiations took a toll on the overall profitability, but they did not destroy the economics of the business. As a matter of fact, there were few other forms of lending that had the potential to generate a similar rate of return. This also implies that sovereign lending was more like an insurance contract combined with a loan; bankers offered support in times of crisis (reluctantly, but in

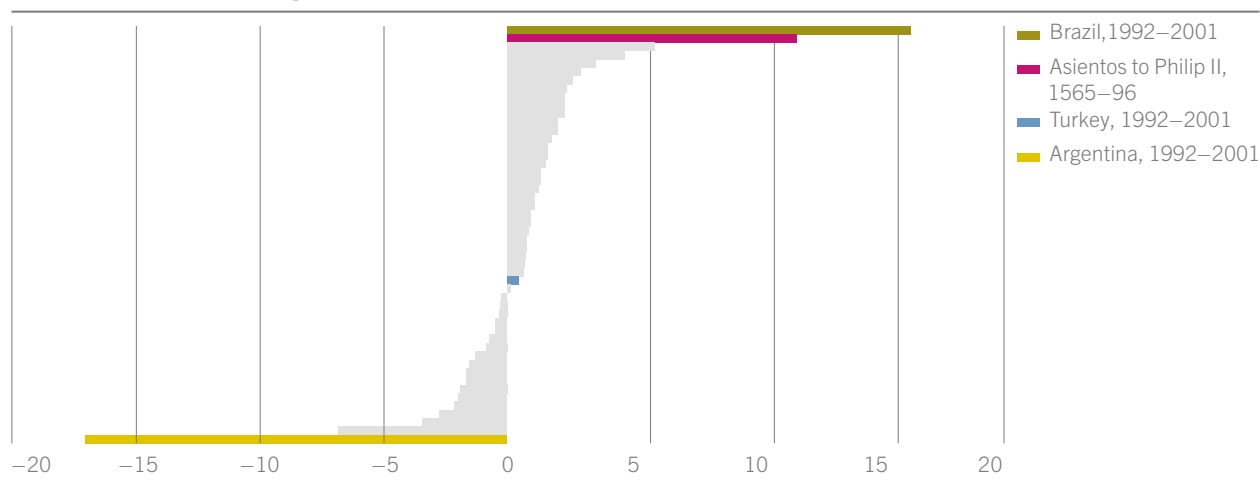
Philip II of Spain (1527–1598)



Source: Web Gallery of Art

Several bankruptcies did little to change his spending nor to the willingness of his bankers to lend him money at nearly constant terms. The portrait – painted by Titian circa in 1554 – shows Philip II wearing his gold-embroidered costume, decorated with his insignia.

Fig. 8 “Excess return” on government bonds



Source: Drelichmann and Voth (2014)

a way they anticipated), only to receive relatively high “insurance premiums” in normal periods. Figure 8 shows just how profitable lending to Philip II was. We compare returns to lenders (over and above the return on alternative, “safe” investments = excess returns). While many lending relationships resulted in losses (such as the double-digit losses for Argentine investors), lending to Philip II was unusually profitable. As a matter of fact, compared to the recent history of sovereign lending, only investors in Brazilian debt did better.

There is a third lesson from 16th-century debt markets that deserves further consideration. One elegant solution to the problem of pro-cyclical fiscal policy is to issue contingent debt – bonds whose coupon (or repayment) depends on how well a country is doing economically. For example, interest rates could rise and fall with GDP growth. This would allow a country to avoid having to make massive interest payments in times of crisis, and it would compensate investors whenever the good times roll. The practical problems with contingent debt contracts are very substantial. Countries could fake GDP numbers, for example, to avoid having to pay. In general, writing contracts indexed to any number generated by a country’s statistical agency is going

to be challenging. Remarkably, the solution to these practical problems was relatively simple in the 16th century. Most of the short-term debt Philip II issued was contingent in nature. It contained clauses making repayment (and interest) contingent on the size and arrival date of the silver fleet from the Americas, for example. Without the annual inflow of silver, the king was much poorer – and uncertainty was great. Poor weather, trouble with the enslaved indigenous laborers, or difficulties in assembling and protecting the convoys of galleons filled with silver on their long voyage across the Atlantic could delay the arrival of the fleet or reduce it markedly in size.

Risk sharing worked because no party to the debt contract had inside information – news travelled at the same speed as the boats. Enforcement was easy, however, the arrival of the fleet was straightforward and easy to observe, and both sides honored their contractual obligations. In other words, the seemingly insurmountable incentive and legal problems that make the issuance of contingent debt nearly impossible today were solved easily and neatly in the age of the galleon and messengers on horseback.²⁰ This suggests that modern debt markets would probably do much better if we were to take some lessons from the past seriously.

Insight No. 5: Bubbles can be avoided

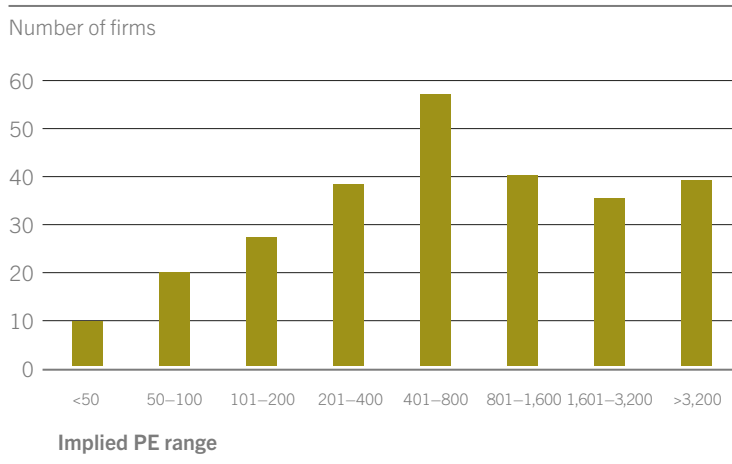
If there is one form of financial excess that seems like a picture-perfect example of financial folly, it is bubbles. At the height of the NASDAQ bubble, firms that were about to become worthless like petfood.com traded for hundreds of millions of dollars; during the Tulip mania, tulip bulbs were traded as if they were made of precious metal. One simple conceptual approach is to say the people periodically go crazy, and that is what explains crazy prices. This is logically consistent, but it is not appealing intellectually.

One alternative that is popular amongst some economists is effectively to define the problem away. Every statement about the existence of bubbles relies on a model of what the “price should be”. If the market price coincides, all is well; if not, we are inclined to call it a bubble. Since agents in financial markets risk their own money, there is something awkward when journalists, analysts, and economists claim that a price is out of line, and hence, that a bubble has formed – perhaps, the model of what prices should be is simply a poor one? Vocal believers in the efficiency of markets – and the inexistence of bubbles – such as Eugene Fama also argue that any mispricing that does exist would disappear almost instantly, as deep-pocketed speculators attack it.

Those who are convinced that bubbles exist try to show that prices are so far out of line that no conceivably realistic scenario in the real world could justify them. For example, to justify NASDAQ valuations, firms in the entire market segment would have to generate “super-profits” of 12% p.a. for a period of 30 years – above and beyond what normal firms typically generated.²¹ This appears unrealistic, not least because actual profits

were negative for most firms. Even under the assumption that firms that were actually generating losses were as profitable as their “old-economy” equivalents, price-to-earnings ratios often exceeded 500 (Figure 9).

Fig. 9 PE ratios of Internet firms at the end of 1999



Source: Ofek and Richardson (2003)

One factor, however, speaks against overvaluations – as the variability of future profit growth increases, the fundamental value of firms goes up. The reason is that a firm can never be worth less than zero because of limited liability – shareholders never have to pay for the debts of a company they own, for example. On the other hand, firm values can rise to very high levels. As the range of possible growth rates of profits increases, the change in positive values “counts more” than the change in negative values – and fundamental values rise. While such a logic can justify the extraordinary value put on individual firms like Amazon, it does not help with valuing the whole sector. This is because many firms explained

their relevance in terms of “first mover advantages”, the idea that only the first digital pioneers would strike gold. If so, then firms can no longer be valued independently. Instead, their values will be inversely related – as one succeeds, all the others fail. One Amazon can be justified, but a whole sector full of Amazon-style valuations cannot.

Sometimes, particular situations in markets allow us to pin down fundamental values with certainty. For example, Chinese stocks are only allowed to move by a maximum of 10% per day. That means that, over a three-day period, stocks cannot rise or fall by more than 30%. Nonetheless, warrants with strike prices that are more than 30% away from the current price regularly trade at non-zero prices in Chinese financial markets less than three days before expiry. This can only be justified by the assumption

that this literature is that, the more “lottery-like” the payoffs of an asset are, the bigger bubbles typically get. That means, for example, that IPOs of early-stage tech firms are natural candidates for bubbles because uncertainty is high. A third factor compounds problems. Where there are few shares available for purchase, “irrational exuberance” in the words of Alan Greenspan becomes much more likely. During the NASDAQ bubble, for example, it was typical that when tech firms went public, founders and venture capital firms owned the majority of shares and that these were “locked up” for a period of time. As these shares were released, free float increased. As a result, it became much easier to short the stock – and as the balance between pessimists and optimists shifted, prices began to slide.²⁴ This suggests that the price spike would not have happened in the first place if supply had not been artificially restricted.

“Market prices are like a voting contest between optimists and pessimists. With short-selling restrictions, only the optimists get to vote, driving prices up. Where short-sellers can readily attack mispricings, bubbles are regularly smaller and less frequent.”

tion that “greater fools” will bid up the price of inherently worthless options even further.²²

What does it take to reduce the frequency of bubbles? Here, evidence from experimental settings, combined with data from actual market episodes, can be highly useful. Creating bubbles in the lab is not particularly hard – prices often deviate from fundamentals.²³ Interestingly, institutional features in the market can influence both the frequency and size of these deviations. One of the key insights from

One general insight is that short-sellers can do a lot of good. Where short-sellers can readily attack mispricings, bubbles are regularly smaller and less frequent.²⁵ The reason is simple – market prices are like a voting contest between optimists and pessimists. With short-selling restrictions, only the optimists get to vote, driving prices up. Data from the NASDAQ episodes illustrates the extreme difficulty that short-sellers faced during the run-up in prices.²⁶ In order to be able to short a stock, a speculator must borrow it. Not all shares are available for borrowing; the price of

obtaining a stock to short it is known as the “rebate rate”. Rebate rates in the most overvalued parts of the stock market were extreme. This shows that many speculators tried to attack the mispricing – and found it very difficult to do so.²⁴

Funds that attack a mispricing in the way Eugene Fama predicted will first see losses if the market moves further away from fundamentals. If the trend continues for a while, investors may lose faith and withdraw funds, leading the fund managers to reverse their strategy. In an insightful paper, Brunnermeier and Nagel show that exactly this happened during the NASDAQ bubble – the hedge funds that “rode” the bubble did best, and lost few investors; those that attacked the mispricing saw assets under management dwindle, and some even had to close shop.²⁷ Had investors stayed with their managers just for a few months longer,

they would have made a fortune. Interestingly, similar things happened during the South Sea bubble, almost 300 years earlier. There, too, riding the bubble turned out to be the best strategy for investors – including those who were convinced that the stock had no future in the long run.²⁸

The following points would help avoid bubble formation:

- a. avoiding IPOs of very young tech firms
- b. floating stocks with limited free float
- c. making it easier to obtain shares for shorting, by, for example, reversing the need to “opt into” programs that allow borrowing shares
- d. avoiding the common practice of banning short sales during crises
- e. encouraging hedge funds to have long-term “lock up” provisions, making it harder for investors to take their money out at the first sign of underperformance.

“Financial history may hold many lessons, but the inevitability of crises is not one of them. Although it is relatively easy to stop them, doing so comes at a cost, and this cost may be quite high. In other words, the right number of financial crises is probably not zero.”

Conclusions

Financial crises devastate human lives, causing major losses of wealth and unemployment. What to do about them will be one of the defining policy questions of the next decade. Public debate is correct in strongly discussing financial instability and its potential sources. One popular

interpretation of the origins of financial instability is that the frailties of the human mind as well as susceptibilities to greed and fear make crises inevitable. Financial history over the last 800 years is often invoked as the key proof for the case that financial folly is deeply woven

into the human psyche, and is inevitable. The American journalist H.L. Mencken in the 1920s famously remarked that “there is always a well-known solution to every human problem – neat, plausible, and wrong.” The aftermath of the crisis of 2007/08 reminds us that this is still true today. Weaknesses of the human mind, like the tendency to overestimate the likelihood of low-probability events or the insufficient updating of priors in the face of new information, amplify financial crises²⁸ – but these cannot be reduced to a constant of human life. Financial history may hold many lessons, but the inevitability of crises is not one of them.

Clio, the muse of history, suggests that crises are not inevitable – given sufficient political determination and a will to live with adverse consequences, it is relatively easy to stop them. Doing so comes at a cost, and this cost may be quite high. To avoid crises completely, the financial sector would have to be stifled and regulated to the point where it would accomplish little of economic value; growth inevitably suffers. In other words, the right number of financial crises – the frequency that a policy-maker should aim for – is probably not zero. For every eye-catching crisis avoided, there is more poverty, more social exclusion, and more unemployment than would otherwise be the case.

The aftermath of the 2007/08 Great Recession demonstrates eloquently that policy-makers can learn from history. Drawing the right lessons from the 1930s was essential in avoiding a much more severe downturn – one that could easily have occurred had it not been for energetic policy intervention, guided by detailed knowledge of what made the Great Depression truly “great”. Similarly, there is scope for reducing the frequency of sovereign debt crises and the size and incidence of bubbles if we listen to Clio’s whispers. Sovereign debt contracts can be made much more resilient,

by reducing banks’ exposure to government bonds, by making risk transfers actually effective, and by writing contingent debt contracts that reduce the procyclicality of fiscal policy.

In the same vein, much can be done to reduce the size and frequency of bubble episodes. The risk of bubbles is much lower where artificial short-selling restrictions are avoided, shares of new firms come to market only once they are relatively mature and profitable, and a large number of shares can be traded with ease. In addition, perverse incentive effects that come from delegating the management of funds to professional managers can be reduced. All of these factors will level the playing field between optimists and pessimists, allow speculators to attack mispricings effectively, and increase the overall stability of financial markets.

The Swiss art historian Jakob Burckhardt famously argued that the purpose of history was not to be smart the next time, but to be “wise forever”. Financial crises will continue to be among the most vexing problems in modern economies; listening to Clio’s wisdom will make it easier to reduce their number, soften their consequences, and appreciate why regulating them out of existence would be a really bad idea.

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